TEQSA ID PRV:14323
CRICOS Provider Code: 03866C

MIT631 DATA ANALYTICS

Unit Outline

Important Update:	Our aim is to provide you with an optimal learning experience, regardless of how this unit is delivered. Teaching will be delivered in line with the most current COVID Safe health guidelines. This may include a mix of online and face-to-face. Please check the learning management system for announcements and updates. Thank you for your flexibility and commitment to studying with Sydney Institute of Higher Education.
Enrolment Modes:	Year 2, Semester 1.
Credit Point(s):	12.5
EFTSL Value:	0.125
Prerequisites:	MIT501 Programming
Typical study commitment:	Students will on average spend 10 hours per week over the teaching period undertaking the teaching, learning and assessment activities for this unit.
Scheduled learning activities:	4 timetabled hours per week, 6 personal study hours per week.
Other resource requirements:	Students will need access to lab computers or will need their own laptops in order to carry out lab exercises and assignments. Students will need to use the latest version of Python IDE such as Spyder, PyCharm or IDLE as well as Jupyter Notebook tool.

Unit description

This unit covers the fundamentals of data analytics. It aims to develop foundation skills and knowledge required for data driven, evidence-based approaches to decision making and performance analysis. Topics include data collection, preprocessing and transformation, visualization and exploratory analysis, and the mathematical and statistical foundations for data modeling. These will help students develop the understanding they will need to make informed decisions using data analysis and communicate the results effectively. The programming language used is Python which is an excellent environment for building many kinds of analytical applications.

Unit learning outcomes (ULO)

	On the successful completion of this unit student will be able to:
ULO1	Demonstrate knowledge of coding, debugging, and running Python programs.
ULO2	Use Python modules and tools to collect, reshape, analysis, and visualise data.
ULO3	Solve a broad set of data analysis problems effectively.
ULO4	Develop programs for various real-world problems by applying data analytics.
ULO5	Evaluate data results and make optimal decisions.

Topics to be included in the unit

1.	Unit Introduction, Python fundamentals
2.	Lists, tuples, sets, and dictionaries
3.	Functions, classes, and modules
4.	Numpy and vectorized computation
5.	Statistics and probability
6.	Manipulating data with pandas
7.	Data cleaning, preparation, and wrangling
8.	Visualising data with Matplotlib
9.	Data aggregation and group operations
10.	Working with Jupyter notebooks
11.	Data analysis examples
12.	Network analysis & Revision

Assessment

Assessment Description	**Grading and weighting (% total mark for unit)**	**Due date**
Assessment 1: Class Participation	10%	Weeks 1-12
Assessment 2: Online Quiz	10%	Week 5
Assessment 3: Assignment 1 - Code	20%	Week 7
Assessment 4: Assignment 2 - Project	20%	Week 12
Assessment 5: Final Exam	40%	Final exam week